

Critical Item: Solenoid Valve, Pneumatic
(2 Items Total)

Find Number: See Table

Criticality Category: 1S

SAA No: 09SY03B-001, Rev. C

System/Area: Pad Water/Pad B, MLP-1,
MLP-2

NASA Part No: N/A

PMN/ Name: See Table

Mfg/ Part No: ASCO/
XX8344XXX

Drawing/ Sheet No: 79K40019/
3,6,7,8,12,15,16,22,23,24

Function: Controls air flow to pressurize and vent open and close sides of associated Firex water control valve actuator.

Critical Failure Mode/Failure Mode No: Fail to energize open/see table

Failure Cause: Caused by binding, corrosion, or failure of internal piece part.

Failure Effect: Loss of open control of associated water valve actuator. Loss of Firex water flow at associated area (see table). Possible loss of life or vehicle during a hazardous condition. Time to effect: immediate.

ACCEPTANCE RATIONALE

Design:

	<u>Rated (psid)</u>	<u>Actual (psid)</u>
Pressure of 8344G82	250	155 (GOX Area)
Pressure of EF8344G82	300	155 (LH2, GH2, LOX, & Hyper Areas)
Pressure of FT834481	125	125 (FSS, RSS, and pad surface)

- 4 Way - 2 position valve
- Brass bar stock valve body
- All internal parts in contact with fluid are stainless steel
- Continuous duty coil
- Valve seat Buna "N"

Test:

- System pre-mission validation (OMI M2067) requires cycling of FSS/RSS water valves to verify proper operation (verifies solenoid valve operational).
- System pre-mission validation (OMI M2088) requires cycling of perimeter area water valves to verify proper operation (verifies solenoid valve operational).
- System pre-mission validation (OMI M2082) requires cycling of MLP water valves to verify proper operation (verifies solenoid valve operational).
- OMRSD, File VI requires verification of the operational function of the water valve in all modes of operation semiannually (service structure), annually (perimeter area), or with each shuttle processing flow (MLP) and at replacement. (Note: Water valve operational function verification also verifies operability of solenoid valve.)

Inspection:

- Pre-mission OMI's require the inspection of the firex valves for for signs of corrosion and/or contamination.
- Preventative Maintenance of the MLPs' Firex Distribution System (OMI M6110) requires inspection and leak check of the pneumatic valves on the MLP annually.
- Firex Water System Maintenance (OMI M6045) requires inspection of the perimeter area firex system components monthly.

Failure History:

- The PRACA database was researched and failure data was found on this component in the critical failure mode.
 - 1) - The failure occurred 11/27/90.
 - The failure cause was debris in valve (binding).
 - The correcting action was removal & replacement of the solenoid valve.
 - 2) - The failure occurred 1/9/91.
 - The failure cause was environmental degradation (corrosion).
 - The correcting action was removal & replacement of the solenoid valve.
 - 3) - The failure occurred 2/24/92.
 - The failure cause was failure of an internal piece part.
 - The correcting action was removal & replacement of the solenoid valve.
- The GIDEP failure data interchange system was researched and no failure data was found on this component in the critical failure mode.

- Correcting Action:

There is no action which can be taken to mitigate the failure effect.

- Timeframe:

Since no correcting action is available, timeframe does not apply.

Table 207

ASCO SOLENOID VALVE CRITICAL ITEMS SUMMARY

<u>FIND NO.</u>	<u>P/N</u>	<u>FUNCTION</u>	<u>FAILURE EFFECT</u>	<u>PMN/NAME/FMN.</u>
A88281 (SV-23) (MLP-1)	FT834481	CONTROL AIR FLOW TO VALVE V-18 ACTUATOR	LOSS OF FIREX WATER FLOW TO MLP-1 SIDE 1 CRYO SKID AREA	K60-0046-01/ MLP-1 FIREX SYSTEM/ 09SY03B-001.020
A88281 (SV-23) (MLP-2)	FT834481	CONTROLS AIR FLOW TO VALVE V-18 ACTUATOR	LOSS OF FIREX WATER FLOW TO MLP-2 SIDE 1 CRYO SKID AREA	K60-0046-02/ MLP-2 FIREX SYSTEM/ 09SY03B-001.087